MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2018/2019

PMT0104 – FUNDAMENTAL MATHEMATICS I

(All sections / Groups)

05 MARCH 2019
9.00 a.m. – 11.00 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of **FOUR (4)** printed pages including the cover page with 4 questions only.
2. Answer all **FOUR (4)** questions
3. Write all your answers in the answer booklet provided.
4. Only NON-PROGRAMMABLE calculator is allowed.

Question 1 (25 Marks)

a) Evaluate the expression.

i. $-9-(-6+3\times-5+8)$ **(3 marks)**

ii. $4[6(8-5)-2]$ **(3 marks)**

b) Solve the following by using least common method.

$$\frac{x-4}{x^2-8x+15}+\frac{2x+3}{x^2+5x-24}$$ **(7 marks)**

c) Simplify the following in term of positive exponents.

$$(x^{-4}y^9)^{-8}z^6$$ **(4 marks)**

d) Write each expression in the standard form $a+bi$.

i. $(3+4i)+(2-5i)$ **(2 marks)**

ii. $(1+i)-(-4-2i)$ **(2 marks)**

iii. $(-3-3i)(-3+3i)$ **(4 marks)**

Question 2 (25 Marks)

a) Find the value(s) of x.

i. $7x-(2x-1)=2$ **(3 marks)**

ii. $x(1+3x)=(3x-1)(x-3)$ **(3 marks)**

iii. $\sqrt{x+5}=5$ **(3 marks)**

iv. $5x^2+8x-4=0$ by using quadratic formula **(5 marks)**

b) Solve the inequalities in interval notation and graph the answer.

i. $18\leq 5x-2\leq 28$ **(4 marks)**

ii. $|5-7x|>9$ **(7 marks)**

Continued...

Question 3 (25 Marks)

a) For $f(x)=\dfrac{x^2+7}{x+3}$, answer the following questions:

i. Find the $f(3)$. **(2 marks)**
ii. What is the value of x when $f(x)=2$? **(3 marks)**
iii. List any intercepts of $f(x)$. **(4 marks)**

b) For $f(x)=\dfrac{3}{x-4}$ and $g(x)=\dfrac{3}{x}+4$,

i. find $(f\circ g)(x)$ **(2 marks)**
ii. find $(g\circ f)(x)$ **(2 marks)**
iii. determine whether the pair of functions f and g are inverses of each other. **(1 mark)**

c) Find the remainder of the following polynomial $(6x^5-2x^3+4x^2-3x+1)$ divided by $(x-2)$ by using given method:

i. synthetic division. **(4 marks)**
ii. remainder theorem **(3 marks)**

d) Use the factor theorem to determine whether the function

$$f(x)=2x^3-3x^2-11x+6$$

has the factor

i. $x+2$ **(2 marks)**
ii. $x-3$ **(2 marks)**

Continued...

Question 4 (25 Marks)

a) Given that the 9th term of an arithmetic series is 22 and the sum of first 6 terms is 33, find
   i. the first term and the common difference **(5 marks)**
   ii. the sum of all the terms from the 5th term to the 10th term. **(3 marks)**

b) Calculate the 7th term of the geometric series
$$\frac{1}{3}, \frac{1}{6}, \frac{1}{12}, \ldots$$ **(4 marks)**

c) Find the slope containing points (-1, -2) and (-3, -4). Thus, find an equation of straight line that passes through the points. **(5 marks)**

d) Find the distance between (-4, 3) and (-2, 5). (Round your answer to 2 decimal places) **(4 marks)**

e) Find the midpoint of each line segment with the given endpoints (2, 6) and (-12, 4). **(4 marks)**

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